

## MRI of pelvic pain :

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Chronic pelvic pain is a frequent complaint in both pre- and post-menopausal women. It is defined as nonmenstrual pain of at least 6 months duration. It is often both a diagnostic and therapeutic challenge. It affects 15% of women between the age of 18 and 50 years. It accounts for 10 to 40% of all outpatient gynecologic visits and explains 35% of diagnostic laparoscopies. It has a significant economic impact, accounting for miss of numerous hours of work.

Many conditions may explain pelvic pain. They include gastro-intestinal, urologic and gynecologic conditions. This lecture will focus on gynecologic conditions causing pelvic pain.

Although US is frequently used as a first line imaging tool for this indication, MRI has been proven a useful tool to evaluate chronic pelvic pain and assess the presence of several pathologic entities such as adenomyosis, endometriosis, fibroids and their complications, as well as pelvic inflammatory disease and pelvic congestion syndrome. Other causes of pelvic pain, such as adhesions, are more difficult to diagnose at imaging.

Endometriosis is a frequent disease, affecting 7-10 % of the general population. MRI has shown a good sensitivity and specificity at diagnosing endometrial cysts (endometriomas) with the characteristic signal of bright T1W lesions with low T2W signal (shading) (1), resulting from the paramagnetic effect of proteins and iron accumulation through repeated hemorrhage in the cyst. The utility of MRI is not though limited to identification of endometrial cysts since other forms, such as deep infiltrating endometriosis and superficial implants may also be evaluated, with a lower sensitivity, but still MRI can be a valuable tool in this assessment (2).

Adenomyosis is caused by migration of endometrial glands in the myometrium and cause both uterine enlargement and pelvic pain. It affects parous women in their late reproductive years and has been recognized in 5-70% of post-hysterectomy specimen. MRI has a high accuracy (85-90%) in diagnosing adenomyosis with identification of a junctional zone thicker than 12 mm (3-4). This reflects the muscular hypertrophy associated with penetration of endometrial glands in the myometrium. Adenomyosis may be diffuse, focal or cystic. It can be confounded with fibroids clinically and by US and MRI has a role in differentiating these entities for which different therapeutic approaches must be considered.

Pelvic congestion syndrome is an underdiagnosed treatable cause of chronic pelvic pain. It affects multiparous women of reproductive age. It is a result of dilated, tortuous and congested veins produced by retrograde flow through incompetent valves in ovarian veins. It presents on imaging as dilated and tortuous parauterine veins. Recognized criterias are the presence of at least 4 ipsilateral tortuous parauterine veins of varying caliber, at least one of which is more than 4 mm in maximum diameter, or an ovarian vein more than 8 mm in diameter. These veins manifest as serpentine flow voids on MR or may have heterogeneous signal if there is slow flow. They enhance after gadolinium administration (5). MR venography may help in the diagnosis (6-7). Imaging must be correlated to clinical symptomatology since about 10% of female have pelvic varices and may be asymptomatic. These patients are amenable to transcatheter embolization.

Pelvic inflammatory disease results from infection of upper female genital tract, involving endometrium, fallopian tubes and ovaries. Although US and CT may both be used for the diagnosis, MRI is interesting in allowing good delineation of the fallopian tube involvement. It will show on T2W dilated tortuous fluid filled fallopian tubes with thickened wall and heterogeneous content. Ovaries may be enlarged. It can also manifest as an ill-defined complex cystic adnexal mass with marked wall enhancement (8).

Several other conditions may cause pelvic pain and their MRI appearance will be described.

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